

Taxonomical Notes on *Neotrichoporoides bulgaricus* Graham, 1987 (Hymenoptera, Eulophidae)

Zoya YEFREMOVA¹, Ekaterina YEGORENKOVA¹ & Peter BOYADZHIEV²

¹Department of Zoology and Dep. of Geography, Ul'yanovsk State Pedagogical University, pl.100-letya Lenina 4, Ul'yanovsk 432700, Russia.

E-mail: eulophids@mail.ru; egorenkova80@mail.ru

²Department of Zoology, University of Plovdiv Paisii Hilendarski, 24 Tsar Asen st., 4000 Plovdiv, Bulgaria. E-mail: boyadz@uni-plovdiv.bg

Taxonomical notes on *Neotrichoporoides bulgaricus* Graham, 1987 (Hymenoptera, Eulophidae). - The male of *Neotrichoporoides bulgaricus* is described from two males collected in the type area. A diagnosis and a redescription of female holotype of the poorly known species are given.

Keywords: Hymenoptera - Eulophidae - Tetrastichinae - *Neotrichoporoides bulgaricus* - description.

INTRODUCTION

Girault (1913a) erected the genus *Neotrichoporoides* with *N. uniguttatus* Girault, 1913 as the type species from Australia (Queensland). It was considered to be a monotypic Australian genus until 1986. Most species placed in this genus up to date were described by Girault (1913b; 1915) from Australia (18 species), by Graham (1986; 1987) from Europe (10 species), by Narendran *et al.* (2006) from India (6 species), and by Kostjukov (2004) and Yegorenkova & Kostjukov (2006) from Russia, Turkmenistan and Algeria (8 species). Currently, the *Neotrichoporoides* is represented by about 62 species worldwide (Noyes, 2009). So far, five species of *Neotrichoporoides* are known from Bulgaria: *N. bulgaricus* Graham, 1987, *N. cavigena* Graham, 1987, *N. mediterraneus* Graham, 1986, *N. szelenyii* (Erdős, 1951) and *N. viridimaculatus* (Fullaway, 1955) (Graham, 1987; Boyadzhiev, 1999, 2004).

In 2006 and 2008, three males of *N. bulgaricus* were collected. Because the species was described and is known so far only from females, a description of the male is provided here. The opportunity is taken to present further characters which were not mentioned in the original description.

MATERIAL AND METHODS

The examined specimens were collected at low elevations on the Pirin Mt. and Osogovo Mt., in southwestern Bulgaria (36-93 km from the type locality) on dry grass communities by screen-sweeping (Boyadzhiev & Triapitsyn, 2007) and fixed in 96%

alcohol. In laboratory, they were air dried with isopropyl alcohol and point-mounted. The specimen from Hadzhidimovo was photographed with reflected light using a Canon Power Shot SD990 IS digital camera under a Carl Zeiss Amplitival microscope.

Morphological terminology follows Graham (1987). The abbreviations used in the text are listed below: POL – postero-ocellar length, the shortest distance between lateral ocelli; OOL – ocellar-ocular distance, the shortest distance between lateral ocellus and eye margin; F1-F4 – first to fourth segments of antennal funicle, C1-C3 – first to third segment of clava; SM – submarginal vein, M – marginal vein, ST – stigmal vein, PM – postmarginal vein; T1-T3, T7 – first to third and seventh tergites of gaster. Absolute measurements are given in millimetres (mm), in other dimensions, relative measurements are used.

The following abbreviations are used for depositories of the types: MHNG, Muséum d'histoire naturelle, Geneva, Switzerland; NHML, Natural History Museum, London, United Kingdom; ZISP, Zoological Institution, Russian Academy of Sciences, St. Petersburg, Russia.

RESULTS

Neotrichoporoides bulgaricus Graham, 1987

Neotrichoporoides bulgaricus Graham, 1987: 71.

MATERIAL EXAMINED: Holotype ♀: Bulgaria, Pirin Mt., Sandanski, vii.1966, M. Kocourek (NHML). – 1 ♂, Bulgaria: Pirin Mt., 3 km NW of Banichan Vill., 41°38'17"N, 23°42'30"E, 605 m, 08.ix.2006, P. S. Boyadzhiev (MHNG). – 1 ♂, Bulgaria: Pirin Mt., 2 km NW of Hadzhidimovo, 41°31'15"N, 23°50'40"E, 495 m, 08.ix.2006, P. S. Boyadzhiev (NHML). – 1 ♂, Bulgaria: Osogovo Mt., Kjustendil, Gerena District, 42°16'48"N, 22°42'58"E, 525 m, 05.ix.2008, M. Antov (ZISP).

DIAGNOSIS: The following combination of features differentiates *N. bulgaricus* from the other species of the genus: malar fovea large, 0.4-0.5 times of malar space; space between submedian lines of scutellum 2.1- 2.6 times as long as broad; subcubital line of setae on forewing ending well distal of speculum. Female antenna with F1 as long as clava plus spine; clava 1.2 times as long as F3. Male antenna with ventral plaque of scape 0.4 times length of scape, situated in the lower half; whorled setae of each finical segment and C1 and C2 reaching at least the middle of the following segment.

REDESCRIPTION OF FEMALE HOLOTYPE

Length 2.7 mm, forewing 2.1 mm.

Head broader than long. POL 1.25 OOL. Eyes without setae. Malar sulcus with large fovea. Antenna with scape not reaching vertex, F1 1.8 times as long as pedicel; pedicel about 2.4 times as long as broad; F1 1.4 times as long as F2; F2 1.1 times as long as F3. Pedicel plus flagellum 2.2 times as long as broad mesoscutum. Clava 1.2 times as long as F3.

Mid lobe of mesoscutum 1.2 times as broad as long, without median line, with 6 pairs of long pale adnotaular setae. Scutellum 1.8 times as long as broad, submedian lines parallel and slightly nearer to sublateral lines than to each other, with 2 pairs of pale setae. Propodeum medially 3.5 times as long as broad; median carina distinct; callus with 4 pale long setae.

Forewing 3.2 times as long as broad. SM 0.5 length of M; M 7.3 times longer than ST; PM a stub. SM with 4 dorsal setae; speculum extending one fourth of MV. Hind wing rounded at apex. Gaster ovate, 2.1 times as long as broad. Sheaths of ovipositor slightly extended.

Colours: head yellow with black vertex and black curved stripe on occiput; antenna brownish with yellow scape. Body blackish with strong green metallic tint, with the following yellow pattern: pronotum, lateral sides of mesoscutum, tegulae and dorsellum; scapulae yellow with large dark spot inside, axillae yellow with dark spot inside; scutellum laterally yellow. Propodeum black, gaster dark brown with yellow broad transverse stripe on T7. Legs yellow.

DESCRIPTION OF MALE

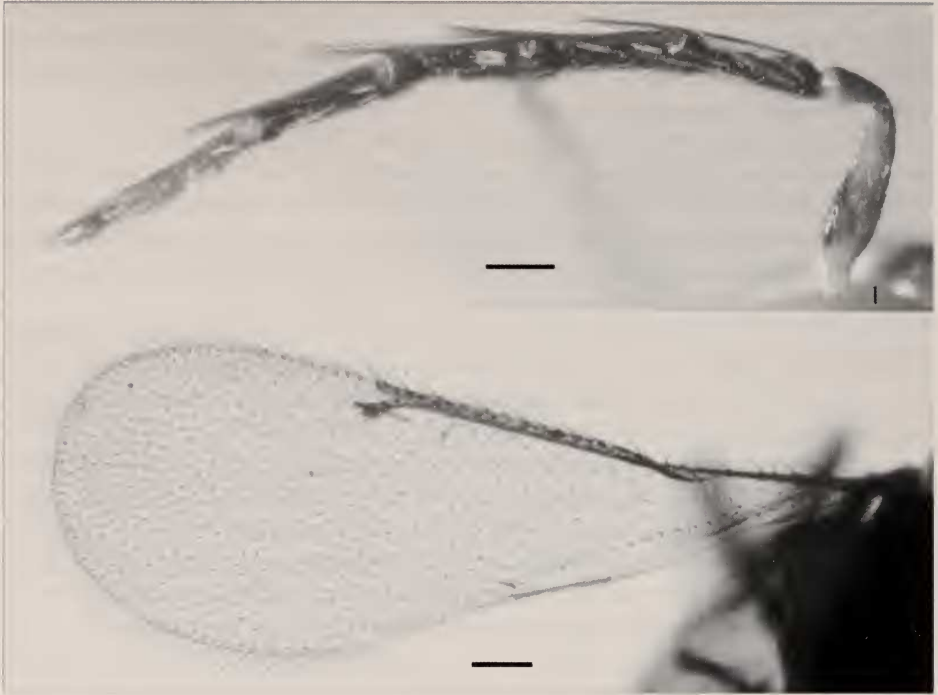
Figs 1-2

Length 1.5-1.6 mm, forewing 1.3-1.4 mm. Colour is very similar to female but slightly darker.

Head about 1.0-1.1 times broader than mesoscutum, about 2.1-2.2 times as broad as long. POL 1.1 OOL. Eyes 1.2-1.3 times as long as broad, without setae. Mouth 1.2-1.5 times malar space. Malar sulcus with triangular fovea and about 0.4-0.45 times length of malar space. Antenna (Fig.1) with scape not reaching vertex; about 3.1-3.3 times as long as broad; scape with ventral plaque 0.4 times length of scape, situated mainly in the lower half; pedicel about 1.6-1.7 times as long as broad, 1.8-1.9 times shorter than F1; F1 2.5-3.0 times as long as broad and 0.8-0.9 times as long as F2; F2 3-4 times as long as broad and equal to F3; F3 3.1-4.0 times as long as broad and equal to F4; F4 3.1-4.0 times as long as broad. Clava 3-segmented, 2.0 times as long as F4, C1 about 2.8-3.3 times as long as broad and slightly longer than C2, C2 about 2.3-2.9 times as long as broad, C3 about 2.7-3.3 times as long as broad; spine about 0.3 length of C3 with long seta. Each segment of funicle, C1 and C2 with whorl of setae, reaching at least the middle of the following segment (Fig. 1). Pedicel plus flagellum 2.75-2.95 times as long as broad of mesoscutum. Thorax 1.6-1.7 times as long as broad. Pronotum 0.7-0.8 times as long as mesoscutum, 1.6-2.0 times as broad as long. Mid lobe of mesoscutum 1.4 times as broad as long, without median line, with 2-3 long pale adnotaular setae on each side, arranged in 1 row. Scutellum 0.86-0.94 times as long as broad, sculptured as mesoscutum; submedian lines parallel and slightly nearer to sublateral lines than to each other, with 2 pairs of pale setae; first pair of setae situated in upper part of scutellum. Dorsellum 2.6 times as broad as long. Propodeum medially 4.2-4.3 times as long as broad; median carina fine; spiracles oval, callus with 4 pale long setae. Forewing (Fig. 2) 2.6-2.8 times as long as broad. SM 0.6-0.7 length of M, with 4 dorsal setae; M 7.0 times longer than ST, with 13 frontal setae; speculum extending one fifth of MV; rather small. Hind wing rounded at apex.

Gaster ovate, 1.2-1.3 times shorter than head plus thorax and as long as thorax, 1.8-2.2 times as long as broad, 1.2 times as narrow as thorax. Last tergite 1.3-1.5 times as broad as long. Longest seta of each cercus is twice the length of the next longest.

Colours: Head yellow with more or less reddish median spot in lower face, brown scrobes and black spot with green metallic tint around ocellar triangle, vertex and occiput; antenna brownish with yellow to reddish scape. Pronotum blackish with yellow to reddish spots on lateral sides and anteromedially, visible through black



FIGS 1-2

Neotrichoporoides bulgaricus Graham; male. (1) Antenna. (2) Forewing. Scale lines = 0.1 mm.

colour; mesoscutum, scutellum and propodeum black with blue-greenish tint; hind parts of scapulae and axillae brown to reddish; dorsellum yellow. Gaster: dark brown dorsally with yellow to reddish median spot on T1-T3; ventrally with yellow to reddish proximal part and dark brown distal part. Legs pale yellowish, except mid and hind brown coxae and 2-4 segments of tarsi.

Host: Unknown.

DISCUSSION

Graham (1987) mentioned in the description of *N. bulgaricus* and in the key under a question that a male with distinctive scape (with ventral plaque situated mainly in the lower half) might belong to this species. He also showed an exact figure of this scape, examined probably from a damaged specimen.

The three males are considered to belong to *N. bulgaricus* by taking the following arguments into account: scape with ventral plaque 0.4 times length of scape, situated mainly in the lower half and corresponding exactly to figure of Graham (1987: Fig. 103); malar fovea about 0.4-0.45 malar space; POL slightly longer than OOL; propodeum medially 4.2-4.3 times as long as broad, callus with 4 setae; forewing with 4 dorsal setae on SMV; M 7.0 times longer than ST, speculum extending one fifth of MV and subcubital line of setae on forewing ending well distal of speculum. The male has further similar yellow markings like the female. In addition, two of the males were collected in the same area as the holotype.

N. bulgaricus Graham was collected in the same area as *N. cavigena* Graham, a morphologically similar species. They differ in the following points: in *N. bulgaricus* the ventral plaque is 0.4 times as long as length of scape and situated mainly in the lower half (0.3 length of scape, placed just above the middle in *N. cavigena*); the F1 is 0.77-0.86 times as long as F2 (0.9 times as long as F2 in *N. cavigena*); each segment of funicle, C1 and C2 with whorl of setae, reaching at least the middle of the following segment (whorls reach about the tips of the segments which bear them in *N. cavigena*).

CONCLUSION

Comparative morphological study of female holotype of *N. bulgaricus* and the two males, collected from the type area, showed that they belong to the same species. Our research confirmed that ventral plaque situated mainly in the lower half as we could see in Graham (1987). A redescription of *N. bulgaricus* is given.

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